

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

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TITLE: System State Rollback After Modification Failure
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Proposed Claim Amendment For Enabling Examiner's Amendment

Claims 1, 3, 9, 10, 20, 22, 26, and 28 are amended. Claims 4-6, 23-25, and 29-32 are canceled. Claims 34-35 are added. All pending claims are produced below:

1. (Currently Amended) A computer implemented method for rolling back a system state after a modification failure, the method comprising the steps of:
 - a rollback manager creating a restore point on a computer;
 - the rollback manager storing a reboot indicator in non-revertible storage;
 - the rollback manager storing initial audit information in non-revertible storage,
 - the initial audit information comprising an enumeration of at least some items present in the system state before deployment of a modification,
 - the items not intended to be modified by the deployment;

the rollback manager monitoring the reboot indicator during deployment of

[[a]] the modification, the monitoring comprising:

the rollback manager detecting a reboot of the computer, the reboot having occurred during the deployment of the modification; and the rollback manager determining based at least in part on the reboot indicator whether the reboot was expected or whether the reboot was unexpected; and

~~responsive at least in part to determining that at least one unexpected reboot occurred during the deployment of the modification, the rollback manager rolling back the system state of the computer according to the restore point; and~~

~~responsive at least in part to determining that no unexpected reboot occurred during the deployment of the modification, the rollback manager indicating that the deployment of the modification was successful;~~
the rollback manager re-auditing the computer, the re-auditing comprising
ing deeming the computer stable based on comparing each of
the enumerated items in the stored initial audit information with
items present in the system state after deployment of the modification to determine missing items; and
responsive to the rollback manager not deeming the computer stable,
the rollback manager rolling back the system state of the computer according to the restore point.

2. (Canceled)
3. (Currently Amended) The method of claim 1 wherein the ~~rollback manager creating a restore point on a computer further comprises: the rollback manager auditing the com-~~

~~puter and storing in non revertible storage~~ initial audit information ~~identifying~~ ~~enumerates~~ at least one item from a group of items consisting of:

~~at least one a~~ currently executing system process;

~~at least one a~~ currently executing user process; and

~~at least one a~~ currently open listening port.

4. (Canceled)
5. (Canceled)
6. (Canceled)
7. (Original) The method of claim [6] 1 wherein the rollback manager deeming the computer stable further comprises:
the rollback manager clearing the reboot indicator.
8. (Original) The method of claim [6] 1 further comprising:
the rollback manager deploying rollback capability on the computer; and
the rollback manager storing, in non-revertible storage, information concerning deployment of the rollback capability on the computer; wherein the rollback manager deeming the computer stable further comprises the rollback manager disabling the deployed rollback capability.
9. (Currently Amended) The method of claim [4] 1 further comprising:
the rollback manager waiting for a specified period of time before re-auditing the computer, ~~and comparing re audit information to the stored audit information.~~
10. (Currently Amended) The method of claim [4] 1 further comprising:

the rollback manager repeating the following steps a specified number of times at specified intervals:

~~responsive to determining that no unexpected reboot occurred during the deployment of the modification;~~
~~the rollback manager re-auditing the computer and comparing re-audit information to the stored audit information; and~~
~~the rollback manager performing an appropriate action responsive to results of the comparison.~~

responsive at least in part to determining that no unexpected reboot occurred during the deployment of the modification;

the rollback manager re-auditing the computer, the re-auditing comprising deeming the computer stable based on comparing each of the enumerated items in the stored initial audit information with items present in the system state after deployment of the modification to determine missing items; and

responsive to the rollback manager not deeming the computer stable, the rollback manager rolling back the system state of the computer according to the restore point.

11. (Original) The method of claim 1 further comprising:

the rollback manager configuring the reboot indicator to indicate that a modification is to be deployed.

12. (Original) The method of claim 11 further comprising:

the rollback manager configuring the reboot indicator to indicate that the deployment of the modification is expected to reboot the computer.

13. (Original) The method of claim 12 wherein the rollback manager configuring the reboot indicator to indicate that the deployment of the modification is expected to reboot the computer further comprises:

the rollback manager monitoring deployment of the modification; and
the rollback manager configuring the reboot indicator responsive to the deployment requesting a reboot of the computer.

14. (Previously Presented) The method of claim 1 wherein the rollback manager monitoring the reboot indicator to detect an unexpected reboot during deployment of a modification further comprises:

the rollback manager reading the reboot indicator, the reading performed after a reboot of the computer, and the reading performed before a loading of an operating system.

15. (Original) The method of claim 14 further comprising:

the rollback manager updating the reboot indicator to indicate the occurrence of the reboot.

16. (Canceled)

17. (Previously Presented) The method of claim 1 wherein the reboot indicator comprises:

an indication of a specific number of reboots that are expected; and
a counter of executed reboots.

18. (Original) The method of claim 1 further comprising:
- the rollback manager deploying rollback capability on the computer; and
- the rollback manager storing, in non-revertible storage, information concerning deployment of the rollback capability on the computer.
19. (Previously Presented) The method of claim 18, further comprising:
- responsive to the rollback manager rolling back the system state of the computer according to the restore point, the rollback manager disabling the deployed rollback capability.
20. (Currently Amended) A computer readable storage medium containing an executable computer program product for rolling back a system state after a modification failure, the computer program product comprising:
- program code for creating a restore point on a computer;
- program code for storing a reboot indicator in non-revertible storage;
- program code for storing initial audit information in non-revertible storage, the initial audit information comprising an enumeration of at least some items present in the system state before deployment of a modification, the items not intended to be modified by the deployment;
- program code for monitoring the reboot indicator during deployment of [[a]] the modification, the monitoring comprising:
- the rollback manager detecting a reboot of the computer, the reboot having occurred during the deployment of the modification; and
- the rollback manager determining based at least in part on the reboot indicator whether the reboot was expected or whether the reboot was unexpected; and

~~program code for, responsive at least in part to determining that at least one unexpected reboot occurred during the deployment of the modification, rolling back the system state of the computer according to the restore point; and~~

~~program code for, responsive at least in part to determining that no unexpected reboot occurred during the deployment of the modification, the rollback manager indicating that the deployment of the modification was successful;~~

re-auditing the computer, the re-auditing comprising deeming the computer stable based on comparing each of the enumerated items in the stored initial audit information with items present in the system state after deployment of the modification to determine missing items; and
responsive to not deeming the computer stable, rolling back the system state of the computer according to the restore point.

21. (Canceled)
22. (Currently Amended) The computer readable medium of claim 20 ~~further comprising: program code for auditing the computer and storing in non-revertible storage, wherein the initial audit information identifies~~ enumerates at least one item from a group of items consisting of:
 - ~~at least one~~ a currently executing system process;
 - ~~at least one~~ a currently executing user process; and
 - ~~at least one~~ a currently open listening port.
23. (Canceled)

24. (Canceled)
25. (Canceled)
26. (Currently Amended) A computer system including a computer to support code execution for rolling back a system state after a modification failure, the computer system comprising:
- a creation module, configured to create a restore point on a computer;
 - a storage module, configured to store a reboot indicator in non-revertible storage, the storage module being communicatively coupled to the creation module;
 - an auditing module, configured to store initial audit information in non-revertible storage, the initial audit information comprising an enumeration of at least some items present in the system state before deployment of a modification, the items not intended to be modified by the deployment;
 - a monitoring module, configured to monitor the reboot indicator during deployment of [[a]] the modification, further configured to detect a reboot of the computer, further configured to determine based at least in part on the reboot indicator whether the reboot was expected or whether the reboot was unexpected, the monitoring module being communicatively coupled to the storage module; and
 - a re-auditing module, configured to, responsive at least in part to the monitoring module determining that no unexpected reboot occurred during the deployment of the modification, re-audit the computer, the re-auditing comprising deeming the computer stable based on comparing each of

the enumerated items in the stored initial audit information with items present in the system state after deployment of the modification to determine missing items; and

a rollback module, configured to, responsive at least in part to the re-auditing module not deeming the computer stable, roll back the system state of the computer according to the restore point.

~~a rollback module, configured to, responsive at least in part to input from the monitoring module indicating that at least one unexpected reboot occurred during the deployment of the modification, roll back the system state of the computer according to the restore point, the rollback module further configured to, responsive at least in part to input from the monitoring module indicating that no unexpected reboot occurred during the deployment of the modification, indicate that the deployment of the modification was successful, the rollback module being communicatively coupled to monitoring module.~~

27. (Canceled)
28. (Currently Amended) The computer system of claim 26 ~~further comprising: an auditing module, configured to audit the computer, the auditing module being communicatively coupled to monitoring module and to the storage module; wherein the storage module is further configured to store, in non revertible storage, wherein the initial audit information identifying enumerates~~ at least one item from a group of items consisting of:
 - ~~at least one a currently executing system process;~~
 - ~~at least one a currently executing user process; and~~

~~at least one~~ a currently open listening port.

29. (Canceled)
30. (Canceled)
31. (Canceled)
32. (Canceled)
33. (Previously Presented) The method of claim 1 wherein the reboot indicator comprises at least one attribute from a group of attributes consisting of:
 - an indication of whether a reboot is expected; and
 - an indication of whether a modification is being deployed.
34. (New) The method of claim 1, further comprising:
 - responsive at least in part to determining that at least one unexpected reboot occurred during the deployment of the modification, the rollback manager rolling back the system state of the computer according to the restore point.
35. (New) The computer readable medium of claim 20, further comprising:
 - program code for, responsive at least in part to determining that at least one unexpected reboot occurred during the deployment of the modification, rolling back the system state of the computer according to the restore point.

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